

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-8 are currently pending. Claims 1-3 have been amended; and Claims 7 and 8 have been added by the present amendment. No new matter is added<sup>1</sup>.

In the outstanding Office Action, Claims 1 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2002/0060583 A1 to Kimura et al. (hereafter “the ‘583 publication”) in view of Japanese Publication No. 2000-206149 A to Tsutomu (hereafter “the ‘149 publication”); Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘583 publication and the ‘149 publication in view of U.S. Patent No. 5,055,352 to Yamada et al. (hereafter “the ‘352 patent”); Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘583 publication and the ‘149 publication in view of U.S. Patent No. 6,597,070 to Miyazaki (hereafter “the ‘070 patent”); and Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘583 publication and the ‘149 publication in view of the ‘352 patent.

Applicants respectfully traverse the rejections of Claims 1 and 3 under 35 U.S.C. § 103(a), and submit that Claims 1 and 3 recite features not taught or rendered obvious by the applied references.

Claim 1 is directed to an anisotropically conductive connector configured to electrically connect a circuit board having an electrode for an inspection of a circuit device, the circuit board electrode being provided corresponding to an electrode to be inspected of the circuit device to be an inspection target. The anisotropically conductive connector includes a lubricant layer provided on at least a surface on a side of the anisotropically conductive connector that comes in contact with the circuit device.

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<sup>1</sup> Amended Claims 1-3 are supported at least by original Claims 1-3.

In a non-limiting example, Applicants' Figure 2 illustrates an anisotropically conductive connector 10a, and a lubricant layer 40 applied to at least a surface side of the anisotropically conductive connector. The anisotropically conductive connector 10a and lubricant 40 come in contact with a circuit device to be the inspection target, as shown in a non-limiting example in Figures 12 and 13. This configuration advantageously ensures that the pressure contact of the inspected electrode does not cause permanent deformation of the anisotropically conductive connector, prevents the transfer of electrode material onto the anisotropically conductive connector, and prevents the inspected electrode from adhering onto the anisotropically conductive connector when the connector heats up during testing operation.<sup>2</sup>

Turning now to the applied references, the '583 publication describes an anisotropically conductive sheet and a production process for manufacturing it. The anisotropically conductive sheet described by the '583 publication contains conductive particles exhibiting magnetism in a state oriented in a thickness-wise direction of the sheet in an elastic polymeric substance, with the durometer hardness of the elastic polymeric substance between 20 and 90. Further, **a lubricant or parting agent is coated on the surfaces of the conductive particles** encased in the elastic polymeric substance.<sup>3</sup> The lubricant or parting agent coated on the surfaces of the conducting particles may preferably be that containing silicone oil.<sup>4</sup>

Thus, the '583 patent describes an anisotropically conductive sheet that contains conductive particles coated with a lubricant or a parting agent and encased in a polymeric substance, so that the required conductivity of the sheet is retained over a long period of time

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<sup>2</sup> Applicants' specification, page 11, lines 7-19.

<sup>3</sup> '583 publication, paragraph [0018].

<sup>4</sup> '583 publication, paragraph [0020].

even when the sheet is used repeatedly, or is used under a high-temperature environment.<sup>5</sup>

However, as acknowledged by the outstanding Office Action, the '583 publication is silent regarding *a lubricant applied to at least a surface on a side which comes in contact with the circuit device to be the inspection target*, as recited by Claim 1.

The outstanding Office Action asserts that the '149 publication cures the above deficiency of the '583 publication. Specifically, the outstanding Office Action asserts that the '149 publication describes an oil coating liquid applied to a probe tip used for testing electrical characteristics of a chip, and that it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the coating liquid of the '149 publication with the teachings of the '583 publication, to arrive at the invention recited in Claim 1. Applicants respectfully disagree, and submit that the combination of the '149 publication and the '583 publication does not render obvious the feature of a lubricant applied to at least a surface of an anisotropically conductive connector on a side which comes in contact with a circuit device to be an inspection target.

The '149 publication is directed to a probe card with a probe needle used for testing electric characteristics. The probe card includes probe needle 3, which oxidizes easily during testing and also can become fouled with residue from an electrode pad that it tests.<sup>6</sup> Thus, the '149 publication describes continuously coating the probe needle with a liquid that is supplied from a sponge reservoir included on the probe card 1.<sup>7</sup>

However, the '149 publication is silent regarding any kind of an anisotropically conductive connector. Thus, the '149 publication is silent regarding any surface of an anisotropically conductive connector with a lubricant.

Further, Applicants respectfully submit that it is not obvious to apply a lubricant to at least a surface of an anisotropically conductive connector based on the '149 publication,

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<sup>5</sup> '583 publication, page 3, column 1, lines 3-6.

<sup>6</sup> '149 publication, paragraph [0005].

<sup>7</sup> '149 publication, Figures 3-4.

which merely describes coating a probe needle which contacts an electrode pad. A probe needle is not analogous to an anisotropically conducting connector sheet. The closest analogy to the probe needle of the ‘149 publication is a single “path-forming part 11” described by the ‘583 publication.<sup>8</sup> But the ‘583 publication already describes adding a lubricant or a parting agent onto conductive particles which are encased in an elastic polymeric substrate forming the path-forming part 11, to address the problem of repetitive use of an anisotropically conductive sheet, so adding a liquid described by the ‘149 publication would be redundant and serve no useful purpose.

Thus, one skilled in the art would not be led to **coat an entire surface** of the anisotropically conductive connector with a lubricant, but would instead follow the teaching of the ‘583 publication and apply a lubricant to the conductive particles instead, even if trying to combine the ‘149 publication with the ‘583 publication.

Accordingly, Applicants respectfully submit that any proper combination of the ‘583 publication and the ‘149 publication, without the use of improper hindsight reconstruction, fails to teach or render obvious all the features recited by Claim 1. Claim 3 recites similar features to Claim 1. Thus, Applicants respectfully submit that Claims 1 and 3 (and all associated dependent claims) patentably define over any proper combination of the ‘583 publication and the ‘149 publication.

Regarding the rejections of Claims 2 and 4-6, Applicants respectfully submit that the secondary references (the ‘352 patent and the ‘070 patent) fail to cure the deficiencies of the combination of the ‘583 publication and the ‘149 publication discussed above.

The ‘352 patent is directed to a ferromagnetic thin film magnetic recording medium, but in no way teaches or suggests an anisotropically conductive connector wherein a lubricant is applied to at least a surface on a side which comes in contact with a circuit device to be an

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<sup>8</sup> ‘583 publication, Figure 1, element 11.

inspection target. The ‘070 patent is directed to a semiconductor device, including projecting electrode portions, but is silent regarding an anisotropically conductive connector wherein a lubricant is applied to at least a surface on a side which comes in contact with a circuit device to be an inspection target.

Accordingly, Applicants respectfully submit that Claims 2 and 4-6 patentably define over any proper combination of the applied references.

Claims 7 and 8 are added to further define over the applied art. Claims 7 and 8 recite a lubricant in a solid powder state at an ordinary temperature. Claims 7 and 8 are supported by the original specification.<sup>9</sup> Thus, no new matter is added.

As discussed above, the ‘583 publication fails to teach or suggest applying a lubricant to a surface of an anisotropically conductive connector. Further, the ‘149 publication describes applying a liquid to a probe needle from a sponge reservoir.<sup>10</sup> Applicants respectfully submit that the sponge 4a described by the ‘149 publication cannot be used to apply a solid lubricant recited by Claims 7 and 8. Accordingly, Claims 7 and 8 are believed to patentably define over any proper combination of the cited references.

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<sup>9</sup> Applicants’ specification, page 29, lines 13-19.

<sup>10</sup> ‘149 publication, Figure 4, element 4a.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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